TECHNICAL SPECIFICATIONS

WASHINGTON STATE FERRIES

M.V. TILLIKUM DOCKSIDE PRESERVATION

CONTRACT NO. 00-7110

TECHNICAL SPECIFICATIONS

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WASHINGTON STATE FERRIES

M.V. TILLIKUM DOCKSIDE PRESERVATION

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TECHNICAL SPECIFICATIONS

For the following Technical Specifications, the Contractor is to provide all labor, material and equipment to accomplish each and every Bid Item unless otherwise specified.

The Specification Item sub-titles in brackets are for WSF internal use only, for Life Cycle Cost modeling. Bidders should ignore such bracketed sub-titles.

1. BERTH VESSEL

{STRUCTURAL/SECURITY}

A. **M.V. TILLIKUM Vessel Particulars:**
Length: 310' 2", Beam: 73' 2", Draft: 15' 6", Gross Tons: 2070

B. Provide labor, material, and equipment to berth the Vessel for accomplishment of the Work specified herein.

2. TEMPORARY SERVICE

{PRESERVATION/SECURITY}

A. Install one (1) telephone on board in a location designated by the Vessel Staff Chief Engineer. The telephone is to have one (1) outside line with toll-free access to Seattle and vicinity and, if different, one (1) line for local numbers. The telephone shall have touch-tone service if available from the Contractor's telephone system.

B. Provide and maintain electricity, water, sewage removal, safe lighted gangway and trash removal services while Vessel is in the Contractor's facility.

C. Provide Safety and Security for the entire Vessel throughout the repair period until such time as the WSF has accepted redelivery of the Vessel. Every reasonable precaution shall be taken to protect the Vessel from the hazards of fire, flooding, pilferage, malicious damage, and other events including cataclysmic phenomena of nature.

D. Provide and maintain comprehensive and effective fire prevention, fire detection. Fire fighting programs and systems sufficient to ensure the safety and integrity of the Vessel. Provide personnel trained in shipboard fire fighting techniques and also trained to cooperate with and assist local fire fighting organizations. Provide sufficient shore fire lines to ensure an adequate supply of fire fighting water, at sufficient pressure, and maintain an adequate number of tested fire-hoses aboard the Vessel to effectively fight fires at any location in the Vessel.

E. Provide and maintain portable fire extinguishers in sufficient quantity, and of the appropriate type, to combat local fires of any class.

F. Provide sufficient fire watches, including roving watches as may be required, to ensure that fires that may be inadvertently started by welding sparks, heat or electrical malfunction, or spontaneous combustion are detected, reported and promptly extinguished.

G. Clean and gas free all spaces and tanks as necessary, and obtain a Marine Chemist certificate for "SAFE FOR WORKERS", and "SAFE FOR HOT WORK". Maintain the certificates during the course of the Work for all Work Items of this Contract.

H. At all times that welding is being done on board the Vessel while being water born the Contractor shall provide and maintain rigid control of welding and grounding for the protection of the hull, hull systems, and appendages. The Vessel shall be properly grounded throughout the period of the Contract except when the Vessel is underway for Trials. There shall be no welding or air arcing undertaken aboard the Vessel until a hull corrosion protection system has been installed to the satisfaction of the WSF Inspector and hull ground cables are installed. To insure proper control, the Contractor shall adhere to the following requirements:

1. Welding power sources used on the Vessel, whether shore-based or placed on the Vessel shall not be used for any other Vessel or structure.

2. Hull ground cables attached to the Vessel shall never be grounded to any other Vessel or structure. Hull ground cables shall be independent of any welding return cables.

3. All welding cables, electrode, welding return cables, hull grounds or temporary power cables shall be completely insulated and never permitted to sag into the water.

4. Grounding contact surfaces shall be thoroughly cleaned to bright, bare metal prior to connection. Grounding lugs shall be secured tightly to grounding plates and the connections periodically checked to ensure that they remain tightly bonded and corrosion free. Only one (1) cable per ground stud shall be allowed, whether its service is hull grounding or welding return. The total cross-sectional area of hull ground wire shall be one million circular mils minimum per 1,000 amperes per 100 feet.

5. The Contractor shall provide all materials and labor required to install and maintain temporary passive galvanic corrosion protection needed to maintain an acceptable hull potential. The Vessel's active corrosion protection system will be secured while the Vessel is in the shipyard.

6. Provide and maintain zinc anodes for hull corrosion protection. Hull potential shall be in the area of +.75 to .9 V as measured on a certified U.S. Filter Electro Catalytic corrosion potential meter, silver-silver chloridem Model 33419-3. This shall be the only meter used to measure hull potential.

7. Hull potential readings shall be taken twice daily until satisfactory potentials have been obtained and at least weekly thereafter. A written log shall indicate the station at which each reading was taken, the amplitude and polarity of the reading, the time and date, and the name of the individual making the readings. This record shall be made available to the WSF Representative upon request.

8. Provide a copy of an updated hull potential record to the WSF Representative in conjunction with progress billings.

PAINTING OF VESSEL AND HULL PRESERVATION

(ATTACHMENT NO. 1)

MARINE COATING SPECIFICATION AND COLOR SCHEME

Area Preparation, Surface Preparation, Grit Blasting, Paint Coatings, and Inspection for Vessel's hull, curtain plates, casing and super structure shall be in accordance with Washington State Ferries' Marine Coating Specification, 01/03 unless otherwise specified in the following Specifications.

3. JOINER DOOR RENEWAL

{STRUCTURAL PRESERVATION, TOPSIDE}

A. Purchase and install twelve new joiner doors as shown on **Attachment No. 16,** WSF Dwg. 4173-004-02, M/V TILLIKUM, Door List and Hardware Schedule**.** Provide Pacific Coast Marine doors (Rick Doty 1-425-743-9550) or equal.

B. New joiner doors and frames shall be manufactured in accordance with CFR-46-72.05. Frames are to be steel angle with Stainless Steel flatbar sill. Flanged frame shall be ¼" thick with a 2" bolting frame. Panels are to be 11 gauge, formed on all edges and suitably insulated for the bulkhead requirement. Panel is to be stiffened with box tube stiffeners at edges, around windows and in way of the closer. Internal core of the doors shall be primed.

C. Remove and replace the following doors: Elevator Machinery room door (68), three (3) doors on the No. 1 and No. 2 crew quarter cabins (62, 63, 64, 65, 66 and 67) (6 total), four (4) plenum supply doors (71, 72, 73 and 74), emergency generator room door (59), exhaust stack access doors, 4 each (69, 70), two (2) not numbered, and the engineers store room door (18) on the main deck.

D. The Contractor shall arrange for the door manufacturer or Best lock representative to install the new door hardware and closures.

NOTE:

Eagle Harbor will be installing the lock core.

TOPSIDE PREPARATION AND PAINTING

Topside Zone Descriptions

M.V. TILLIKUM is divided into eight (8) Zones for inspection, surface preparation, painting, and bidding purposes. No areas in the Zones have been intentionally omitted for preparation or painting. It is the Contractor's responsibility to prepare, and coat all surfaces as required by the Specification. The following Zone descriptions are provided for identification purposes.

NOTE:

Prior to commencing surface preparation the Contractor will present all areas for inspection, by the WSF Inspector and the Vessel Staff Chief Engineer, of the protective measures taken to prevent harm or damage to the Vessel's equipment, other surfaces, and systems.

Zone No. 1 Port and Starboard Exterior Curtain Plating from the inboard top edge of the Guard to the Passenger Deck level to the Curtain Plate extremes at No. 1 and No. 2 End.

Zone No. 2 Port and Starboard Interior Curtain Plating from the inboard top edge of the Guard to the Passenger Deck level and from the Curtain Plate extremes at No. 1 and No. 2 End, including the Fixtures, Vents and Louvers. Vehicle Deck vehicle lanes area extending from No. 1 to No. 2 End. This area includes the curbing, forward face of the thwart ship coaming between the Pickleforks, inboard Machinery Casings surfaces, Overhead, Ventilation Louvers, Ventilation Ducting, Piping, Curbing, Light Fixtures, and all Appendages, including all Machinery Casing vestibules.

Zone No. 3 Passenger Deck exterior surfaces (outside of the Passenger Cabin) from the Passenger Deck level to the top edge of the Curtain Plate above the Passenger Cabin windows and below Texas Deck handrails. Includes all weather surfaces of both the Port and Starboard Passenger Cabin exteriors, Troughs and Safety Handrails below the windows, overhang above the windows, Drain Pipes and hangers, No. 1 and No. 2 End, Promenade Deck exteriors, No. 1 and No. 2 End, Promenade Deck interiors, No. 1 and No. 2 End Pickle fork areas, all attachments and Appurtenances, Ladders, Overheads, Bulkheads, Fire Stations, Doors and Passenger seating.

Zone No. 4 Deck surface areas. Includes Texas Deck level deck and all Housetops, Passenger Deck level decks, Promenades and Pickleforks, Vehicle Deck walkways and all Ladders, Stairways, Landings, Safety areas and Non -Skid Vehicle Decks.

Zone No. 5 Pilothouse and cabins including the elevator trunk exterior surfaces. Includes all weather surfaces including Safety Handrails below the windows, overhang above the windows, Drain Pipes and hangers, all attachments and Appurtenances, Ladders, Overheads, Bulkheads, Fire Stations.

Zone No. 6 Exhaust stack and cabin including all exterior surfaces. Includes all weather surfaces including Safety Handrails below the windows, overhang above the windows, Drain Pipes and hangers, all attachments and Appurtenances, Ladders, Overheads, Bulkheads, Fire Stations.

Zone No. 7 Stairway vertical and overhead surfaces from Lower Vehicle Deck to Passenger Deck.

Zone No. 8 Handrails, Railings, Screens, and Gates on all decks, Ladders, Passenger Deck to the top of the Mast.

4. PREP AND PAINT ZONE 1, CURTAIN PLATE
{STRUCTURAL PRESERVATION, TOPSIDE}

A. Perform an SSPC-12, Low Pressure Water Cleaning (LP WC/SC1) at 3,000 - 5,000 PSI, in Zone 1. The wand shall be held no more that twelve inches (12") from surface being washed. Use **International GMA 571 (or equal)** in accordance to the Manufacturer's instructions. Do not allow cleaner to dry on the surface, clean up any spillage immediately. Dilute GMA571 degreaser cleaner with four (4) parts water to one (1) part cleaner. Fresh water wash to remove cleaner, salts and contaminates.

B. Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

C. Prepare various areas, as authorized by the WSF Inspector, to an SSPC-SP3, Power Tool Cleaning.

NOTE:

For bidding purposes, assume that **600 Square Feet** will require preparation and painting. Upon completion of the preparation, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

D. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

E. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 1.

5. PREP AND PAINT ZONE 2, VEHICLE DECK
{STRUCTURAL PRESERVATION, TOPSIDE}

NOTE:

The Contractor is advised to exercise care and caution to assure that all insulation, light fixtures, speakers, cabling, alarms and appurtenances are protected and not damaged during the course of this work.

A. Map all signs and stencils prior to being surface preparation. Re-new all signs and stencils upon completion of painting.

B. Remove the bird guard spike strips as required from all flat surfaces prior to preparation and painting. Install new spike strips upon completion of painting.

NOTE:

For estimating purpose assume **800 ft** of Bird Guard will be required to be removed and reinstalled, the Contract will be adjusted upward or downward to account for the actual feet authorized by the WSF Inspector.

C. Remove the unused studs from the curtain plate and overhead. Grind surface area to a smooth surface.

NOTE:

For estimating purpose assume **100** studs will require removal, the Contract will be adjusted upward or downward to account for the actual amount authorized by the WSF Inspector.

D. Perform an SSPC-12, Low Pressure Water Cleaning (LP WC/SC1) at 3,000 - 5,000 PSI, in Zone 2. The wand shall be held no more that twelve inches (12") from surface being washed. Use **International GMA 571 (or equal)** in accordance to the Manufacturers instructions. Do not allow cleaner to dry on the surface, clean up any spillage immediately. Dilute GMA571 degreaser cleaner with four (4) parts water to one (1) part cleaner. Fresh water wash to remove cleaner, salts and contaminates.

E. Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

F. Prepare Zone 2 areas of abrasion and corrosion to an SSPC-SP6, Commercial Blast Cleaning. Areas that cannot be blasted shall be prepared to a SSPC-SP11, "Power Tool Cleaning to Bare Metal". Include the top side of the stiffener above the window cutout and curbing. Remove the MES containers prior to beginning blasting. All ratholes and sharp edges of all angles and cutouts shall be mechanically ground to remove any sharp edges.

NOTE:

For bidding purposes, assume that **4,000 Square Feet** of Zone 2 will require blasting to SSPC-SP 6, Commercial Blast Cleaning. Upon completion of blasting, the Contract will be adjusted upward or downward to account for the actual scope of blasting authorized by the WSF Inspector.

NOTE:

The Contractor shall have the option to an SSPC-12/Nace 5, UHP-WJ4/SC1, "Ultrahigh-Pressure Water Jetting" only if the profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

G. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

H. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 2.

6. PREP AND PAINT ZONE 3, PASSENGER CABIN EXTERIOR {STRUCTURAL PRESERVATION, TOPSIDE}

A. Perform an SSPC-12, Low Pressure Water Cleaning (LP WC/SC1) at 3,000 - 5,000 PSI, in Zone 3. The wand shall be held no more that twelve inches (12") from surface being washed. Use **International GMA 571 (or equal)** in accordance to the Manufacturer's instructions. Do not allow cleaner to dry on the surface, clean up any spillage immediately. Dilute GMA 571 degreaser cleaner with four (4) parts water to (1) part cleaner. Fresh water wash to remove cleaner, salts and contaminates.

B. Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

C. Upon completion of Painting, the Contractor shall wash the external surfaces of all windows to remove any streaking, paint, paint chips, and any other residue left by the water wash and painting.

D. Prepare areas of abrasion and corrosion to an SSPC-SP6, Commercial Blast Cleaning. Areas that cannot be blasted shall be prepared to a SSPC-SP11, "Power Tool Cleaning to Bare Metal". Include the top side of the stiffener above the window cutout and curbing. Remove the MES containers prior to beginning blasting. All ratholes and sharp edges of all angles and cutouts shall be mechanically ground to remove any sharp edges.

NOTE:

For bidding purposes, assume that **4,000 Square Feet** of Zone 3 will require blasting to SSPC-SP 6, Commercial Blast Cleaning. Upon completion of blasting, the Contract will be adjusted upward or downward to account for the actual scope of blasting authorized by the WSF Inspector.

NOTE:

The Contractor shall have the option to an SSPC-12, UHP-WJ4/SC1, "Ultrahigh-Pressure Water Jetting" only if the profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

E. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

F. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 3.

7. PREP AND PAINT ZONE 4, DECKS AND CABIN TOPS {STRUCTURAL PRESERVATION, TOPSIDE}

A. Perform an SSPC-12, Low Pressure Water Cleaning (LP WC/SC1) at 3,000 - 5,000 PSI, in Zone 3. The wand shall be held no more that twelve inches (12") from surface being washed. Use **International GMA 571 (or equal)** in accordance to the Manufacturer's instructions. Do not allow cleaner to dry on the surface, clean up any spillage immediately. Dilute GMA571 degreaser cleaner with four (4) parts water to one (1) part cleaner. Fresh water wash to remove cleaner, salts and contaminates.

B. Prepare the **entire area** of the Texas Deck to SSPC-SP6, Commercial Blast Cleaning, with a track blaster to obtain a 2 to 3 mil profile. Remove all traces of blast beads from all areas of the Vessel. Areas that are inaccessible to a track blaster shall be prepared to SSPC-SP11, Power Tool Cleaning, to bare steel.

C. Prepare areas of abrasion and corrosion on the **pilothouse** and **cabin tops** to an SSPC-3, Power Tool Cleaning.

NOTE:

For bidding purposes for pilothouse and cabin tops, assume **150 square feet** for both pilothouse and cabin tops will require preparation and painting. Upon completion of the preparation, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

D. For Pilothouse and Cabin Tops:

1) Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

2) Apply one (1) coat Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 4.

E. For deck coating:

1) Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

2) Apply AMERON Dev-grip 237M, Haze Gray, to all non-skid areas.

8. PREP AND PAINT ZONE 5, PILOTHOUSE AND SUPERSTRUCTURE {STRUCTURAL PRESERVATION, TOPSIDE}

A. Perform an SSPC-12, Low Pressure Water Cleaning (LP WC/SC1) at 3,000 - 5,000 PSI, in Zone 5. The wand shall be held no more that twelve inches (12") from surface being washed. Use **International GMA 571 (or equal)** in accordance to the Manufacturers instructions. Do not allow cleaner to dry on the surface, clean up any spillage immediately. Dilute GMA571 degreaser cleaner with four (4) parts water to one (1) part cleaner. Fresh water wash to remove cleaner, salts and contaminates.

B. Prepare areas of abrasion and corrosion to an SSPC-3, Power Tool Cleaning.

NOTE:

For bidding purposes, assume that **1,000 Square Feet** will require preparation and painting. Upon completion of the preparation, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

NOTE:

The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

C. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

D. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 5.

9. PREP AND PAINT ZONE 6, STACKS AND MASTS {STRUCTURAL PRESERVATION, TOPSIDE}

NOTE:

For bidding purposes, assume that **1,000 Square Feet** will require preparation, staging will be required. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 - 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zone 6. The wand shall be held no more that twelve inches (12") from surface being washed. Use Ameron, Prep 88 or International GMA or equal when washing.

B. Prepare areas of abrasion and corrosion to an SSPC-SP3, power tool cleaning.

NOTE:

For bidding purposes assume **1,000 square feet** will require preparation.

NOTE:

The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

C. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

D. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 6.

10. PREP AND PAINT ZONE 7, STAIRWELLS
{STRUCTURAL PRESERVATION, TOPSIDE}

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 - 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zone 7. The wand shall be held no more that twelve inches (12") from surface being washed. Use Ameron, Prep 88 or International GMA or equal when washing.

NOTE:

The stairways and landings are between the passenger doors down to the vehicle deck.

B. Remove the deck tile and bullnose on the stair treads and the matting on the landing.

C. Prepare areas of abrasion and corrosion to an SSPC-SP11.

NOTE:

For bidding purposes assume **1,000 square feet** will require preparation.

NOTE:

The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the hull profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector**.**

D. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

E. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 7.

F. Install new RCA Rubber Co. abrasive strip rubber stair tread and matching riser, color 547 VI 608, the full width of the stairway.

11. PREP AND PAINT ZONE 8, HANDRAILS AND SCREENS {STRUCTURAL PRESERVATION, TOPSIDE}

A. Prepare handrails by roughing the surface with sand paper and thinner on the Pickle Forks and Texas Deck.

NOTE:

Care shall be taken for not to disturbing the galvanizing.

B. Remove the screens from the picklefork railings. Grit blast to an SSPC-SP6, Commercial Blast Cleaning prior to coating.

C. The screens are currently U-channel frames with wire mesh, replace all U-channel with flat bar frames, the mesh should be welded to the flat bar.

D. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item. Hand-stripe all edges.

E. Apply one (1) full coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the entire area of Zone 8. Hand-stripe all edges.

F. Install the picklefork screens using all new 316 Stainless Steel hardware.

12. PILOTHOUSE 24VDC INSTALLATION
{IT}

A. Modify the 24 Volt DC Distribution System for the pilothouse electronic equipment as indicated on **Attachment No. 3**, WSF Dwg. No. 8403-554-090-01, M/V TILLIKUM, Pilothouse 24V DC Distribution System Modifications.

B. Remove and restore all interferences including insulation disturbed by mounting of Items and installing transits.

C. Conduct megger and electrical tests of all new cabling to insure the installation is correct. Provide WSF Inspector with three (3) copies of test results.

D. Connections to RDU A09 and A10 in the pilothouse consoles will be done by a WSF supplied Contractor.

E. Prepare all surfaces affected by this work to an SSPC-SP3, Power Tool Cleaning.

F. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

G. Apply one (1) coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the areas prepared in this Item.

13. LAN AND CELL PHONE INSTALLATION
{IT}

A. Install new fiber optic LAN, cell phone system and antennas as shown on **Attachment No, 4**, WSF Dwg. No. 8403-554-090-01, M/V TILLIKUM, Super-Lan/Security & Surveillance/ Wireless Over Water Installation, **Attachment No, 5**, WSF Dwg. No. 8403-642-095-02, M/V TILLIKUM, Cellular Phone Installation, **Attachment No**. **6** WSF Dwg. No. 8403-661-094-01, M/V TILLIKUM Antenna Arrangement and **Attachment No**. **17** WSF Dwg. No. 8403-661-094-02, M/V TILLIKUM Antenna Arrangement Ripout & Relocation.

NOTE:

Wherever new penetrations are required they shall maintain the watertight and fire ratings of the bulkhead or deck being penetrated. Existing non-poured bulkhead and deck penetrations may be reused. New Multi-Cable Transits shall be Nelson type. Test all deck, bulkhead and hull penetrations in company with and to the satisfaction of the USCG and WSF Inspector, and the Staff Chief Engineer.

B. Prior to installing any fiber optic cables perform a OTDR test and submit results to the WSF Inspector. Install new cables required by **Attachment No. 4**. Insure cables and wires installed by this ITEM are run and marked, and continuity tests are made in accordance with **Attachment No. 2**.

C. Make the ripouts as shown on **Attachment No. 17.** Install foundations and antennas as required on **Attachments Nos. 4, 5 and 6**, welding shall be in accordance with **Attachment No. 2.**

D. Install the cellular phone system as shown on **Attachment No. 5**.

E. The Contractor will provide the services of a Netversant to mount the equipment, perform final terminations and system check out.

F. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

G. Apply one (1) coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the areas prepared in this Item.

14. SECURITY SYSTEM INSTALLATION
{SECURITY}

A. Install security modifications shown on **Attachment No. 7 thru 11**. Note WSF supplied Items on **Attachment No. 10**, WSF Dwg. No. 8000-639-095-02, M/V TILLIKUM, Homeland Security

B. Enclose the ladder as shown on **Attachment No. 7,** WSF Dwg. No. 8403-639-005-01, M/V TILLIKUM, Pilothouse Security Modifications at each end with a wire mesh enclosure. Relocate ladders and modify the passenger bench seating.

NOTE:

Raise the enclosure barrier overhead 1” above the door side, so that the slope is away from door entrance.

NOTE:

Wherever new penetrations are required they shall maintain the watertight and fire ratings of the bulkhead or deck being penetrated. Existing non-poured bulkhead and deck penetrations may be reused New Multi-Cable Transits shall be Nelson type. Test all deck, bulkhead and hull penetrations in company with and to the satisfaction of the USCG and WSF Inspector, and the Vessel Staff Chief Engineer.

C. Fabricate equipment cabinet and electronic security devices foundations and camera mounts in the locations shown on **Attachment No. 8**, WSF Dwg. No. 8403-639-095-01, M/V Tillikum, Homeland Security Plan.

D. Install new cables required by **Attachment Nos. 9, 10 and 11**. Insure cables and wires installed by this ITEM are run and marked, and continuity tests are made in accordance with **Attachment No. 2.**

E. Obtain the services of ABSCO Alarms (206) 367-1166 to make all connections and demonstrate the operation of the system with the exception of the locks. Obtain the services of Best Locks (Stanley Security Solutions Phone 877-433-4370) for the installation and present for contractor acceptance testing of installed electronic Best door locks. The Best Locks Representative shall confirm that locks are properly installed and wired to the Hirsch Access control panels prior to testing. During testing the Best Lock Representative shall witness testing of all Best electronic door locks and be consulted on any issue if the door lock fails to operate properly.

F. Install stud runs and penetrations, run cables and install the security hardware and electrical components as shown on **Attachment No. 10**.

G. Replace all disturbed structural, thermal, and acoustical insulation to match original installation that are US Coast Guard Approved material.

H. Prepare all surfaces affected by this work to an SSPC-SP3, Power Tool Cleaning.

I. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

J. Apply one (1) coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the areas prepared in this Item.

15. SECURITY ENCLOSURE
{SECURITY}

A. Install a new security enclosure shown on **Attachment Nos. 12 thru 14**.

B. Electrical installation for the new enclosure shall be in accordance with **Attachment No. 13** WSF Dwg. 8403-638-090-01, M/V Tillikum, Miscellaneous Electrical Modifications For Texas Deck Enclosure No. 1 End.

C. Provide two (2) new Pacific Coast Marine Doors or equal, 30 x 78 weather access doors. The deck gear locker shall have ¼ inch high undercut.

D. Install the ventilation system for the security room as shown on **Attachment No. 14**, WSF Dwg. No. 8403-639-012-01, M/V Klahowya, Security Equipment Enclosure Ventilation Arrangement & Details.

E. Add standoffs on storeroom bulkheads to protrude beyond insulation (for future shelving installation) as directed by Staff Chief Engineer. Assume installation of 10 each 1" x 6" x ¼" standoffs.

F. Replace all disturbed structural, thermal, and acoustical insulation to match original installation with US Coast Guard Approved material.

G. Prepare all surfaces affected by this work to an SSPC-SP3, Power Tool Cleaning.

H. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas repaired in this Item.

I. Apply one (1) coat of INTERNATIONAL Intercare 755, to minimum of 2 mils (DFT), of proper color to the areas prepared in this Item.

16. WEIGHT CONTROL
{SECURITY}

A. The Contractor shall document weight changes and centers of gravity throughout the execution of work.

B. At the pre-arrival conference the Contractor shall prepare and submit to WSF for approval, a plan for monitoring weight and center information for all weights added, removed and relocated during this Vessel availability. This plan will address individuals, equipment and techniques to be used in the weight control process including the following points:

1. Certification of weighing facilities.
2. Where (location) the weighing will be accomplished.
3. If software is to be used, identify the software.
4. A sample data sheet showing date and time of weighing, the individual responsible for the activity, material identification, unit weight, quantity, center of gravity, and final disposition of the material (i.e. added, removed or relocated).

C. Data sheets generated by the approved process shall be submitted to WSF with progress invoices. Progress payments WILL NOT be made until all of the required weight control records have been reviewed by the WSF Representative.

17. INSTALLATION OF WALK OFF MAT

{STRUCTURAL PRESERVATION, TOPSIDE}

ASBESTOS WARNING

Existing deck tile, underlayment, and joiner panels contain asbestos of varying amounts. Tile, underlayment, and joiner panel removals shall be accomplished by licensed personnel in accordance with current Federal, Local and State environmental regulations. Removed materials shall be disposed of in accordance with current Federal, Local and State regulations.

A. Install Walk Off Mats as shown on **Attachment No. 15,** WSF Sketch **"**Walk-Off Mat Detail".

B. Remove and re-install all interferences as required.

C. Remove and dispose of all the existing tile and underlayment in both No. 1 and No. 2 End Lower Passenger Cabins adjacent to the four (4) picklefork doors extending three feet (3') beyond the door frames in the athwart ships directions and eight feet (8') from the doors in the longitudinal direction as laid out by the WSF Inspector. Enclose area to be blasted to prevent the contaminants of this work going to the surrounding area, this includes the overhead and venting.

D. Prepare the decks to SSPC-SP6, Commercial Blast Cleaning with track blaster. Remove all traces of blast beads from all areas of the Vessel.

E. All areas that are inaccessible to a track blaster shall be prepared to SSPC-SP3, Power Tool Cleaning.

F. Apply two (2) coats of INTERNATIONAL Intertuf 262 Series epoxy, to a minimum of 5 mils (DFT), each, of contrasting colors, to all prepared surface areas in this Item.

G. Install new underlayment in all areas of removed underlayment. The new underlayment shall provide A-30 structural fire protection. The underlayment is to be asbestos free and USCG approved. The underlayment system shall be Poly-Spec 7K or equal as approved by the WSF Inspector.

H. Second coat shall be applied to smooth hollows, low spots and other imperfections in the first coat of underlayment. Where a difference in height exists in way of doors to adjacent spaces the underlayment shall transition eighteen inches (18") and be gradually ramped down to the low area. When the underlayment is sufficiently dry, sand out the trowel ridges to provide a smooth surface for tile installation. No trowel ridges shall show through the tile within one (1) year of installation.

I. Apply a full "skim coat" of PolySpec Lite Latex, or Ardex Feather Finish or an approved equal to the entire deck area being tiled. The skim coat shall provide a level and smooth surface for tile application. The Contractor shall warrant that the skim coat will not de-laminate from the underlayment, crack, or bubble during the warranty period. All or equal substitutions shall be approved by the WSF Inspector. The finished deck surface shall be flush with all doorsills and faired to account for deck camber.

J. Coat underlayment under walk off mats and for one tile width around the perimeter with epoxy sealer to make the underlayment waterproof.

K. The walk off mat shall be sized to extending two feet (2') beyond the door frames in the athwart ships directions and six feet (6') from the doors in the longitudinal direction as laid out by the WSF Inspector.

1. The walk off mats shall be Bonar Floors Coral Duo-Graphite 9110.

2. The mats shall be flush with the existing tile and be laid with the ribs running at right angles to the walking direction.

3. The mats shall be removable and flush with the existing tile.

4. Install walk off mat stainless steel transition strips with removable rubber flat top flush with the existing tile and capturing the outer perimeter of the mats.

5. Install new tile to match existing to all areas that were disturbed and that have not received a walk off mat.

(END)